

CLAIMS

1.

A suction-type submerged surface cleaner comprising:

- an injection moulded cleaner head defining an internal valve chamber formed by valve chamber walls;
- an inlet to the valve chamber;
- an outlet from the valve chamber; and
- a hammer arranged to oscillate in the valve chamber, under the influence of suction flow through the valve chamber from the inlet to the outlet, between respective positions in which opposite faces of the hammer alternately contact internal surfaces of opposing valve chamber walls, thereby to control the flow of liquid through the cleaner head,

wherein contact surfaces of the valve chamber walls, which are contacted internally by the said faces of the hammer, are provided internally by regions of the valve chamber walls which are reduced locally in thickness compared to other regions of the valve chamber walls and wherein at least some relatively thick regions of the valve chamber walls are formed during moulding with internal cavities to provide buoyancy for the cleaner.

2.

A submerged surface cleaner according to claim 1 wherein the cleaner head is injection moulded using a blowing agent which creates the cavities in relatively thick regions of the valve chamber walls.

3.

A submerged surface cleaner according to claim 1 or claim 2 which includes a tubular structure moulded separately from the cleaner head and including outlet passages which extend from the valve chamber outlet in side by side relationship.

4.

A submerged surface cleaner according to claim 3 wherein the tubular structure is connected in sealed manner to the cleaner head.

5.

A submerged surface cleaner according to claim 4 wherein the tubular structure has an operatively lower or upstream end which is press-fitted to the valve chamber outlet.

6.

A submerged surface cleaner according to claim 5 wherein the passages are separated from one another by a dividing wall forming an integral part of the tubular structure.

7.

A submerged surface cleaner according to claim 6 wherein a lower end of the dividing wall is received in a clevis provided by a retaining member of the cleaner head.

8.

A submerged surface cleaner according to any one of claims 3 to 7 wherein the tubular structure includes an external fin formed during moulding with cavities therein to provide buoyancy.

9.

A submerged surface cleaner according to any one of claims 3 to 8 which includes a ballast weight attached externally to a valve chamber wall.

10.

A submerged surface cleaner according to claim 9 including an elongate, bowed bump strip having an operatively upper end engagable selectively with any one of a series of retaining formations on the exterior of the tubular structure and an operatively lower end engaged between the ballast weight and the cleaner head.

11.

A submerged surface cleaner according to any one of claims 3 to 10 including a bumper having a curved rim and a central hub which is attached to the tubular structure so that the curved rim is spaced from the tubular structure.

12.

A submerged surface cleaner according to claim 11 wherein the hub is clipped to the tubular structure, the position at which the hub is so clipped being adjustable.

13.

A submerged surface cleaner according to claim 12 wherein the tubular structure includes elongate recesses on opposite sides into which the hub is clipped.

14.

A submerged surface cleaner according to any one of claims 3 to 13 wherein the passages have a polygonal cross-sectional shape.

15.

A submerged surface cleaner according to any one of claims 3 to 13 wherein the passages have an oval or elliptical cross-section.

16.

A submerged surface cleaner according to any one of the preceding claims wherein the regions of the valve chamber wall which are reduced in thickness are so reduced by virtue of localised indentations in the external surfaces of the opposing valve chamber walls.

17.

A submerged surface cleaner according to any one of the preceding claims wherein the valve chamber inlet is provided by an opening in a cover which is outwardly convex relative to the valve chamber.